

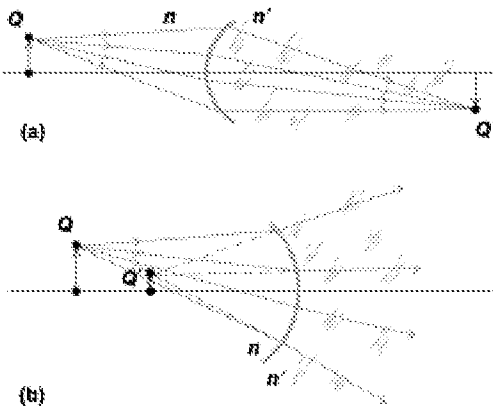


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# Optical image

The image formed by the light rays from a self-luminous or an illuminated object that traverse an optical system. The image is said to be real if the light rays converge to a focus on the image side and virtual if the rays seem to come from a point within the instrument (see illustration).



(b) refracting surface separating media  $n$  and  $n'$  are brought to a focus at the image point  $Q'$ . (b) Virtual image. Rays leaving  $A$  and refracted by the concave surface separating  $n$  and  $n'$  appear to be coming from the virtual image point  $Q'$ . As the rays are diverging, they cannot be focused at any point. (Modified from F. A. Jenkins and H. E. White, *Fundamentals of Optics*, 4th ed., McGraw-Hill, 1976)">

*Optical images. (a) Real image. Rays leaving object point  $Q$  and passing through the refracting surface separating media  $n$  and  $n'$  are brought to a focus at the image point  $Q'$ . (b) Virtual image. Rays leaving  $A$  and refracted by the concave surface separating  $n$  and  $n'$  appear to be coming from the virtual image point  $Q'$ . As the rays are diverging, they cannot be focused at any point. (Modified from F. A. Jenkins and H. E. White, *Fundamentals of Optics*, 4th ed., McGraw-Hill, 1976)*

The optical image of an object is given by the light distribution coming from each point of the object at the image plane of an optical system. The ideal image of a point according to geometrical optics is obtained when all rays from an object point unite in a single image point. However, diffraction theory teaches that even in this case the image is not a point but a minute disk. *See also* [Diffraction](#).

From the [standpoint](#) of geometrical optics, if this most desirable type of image formation cannot be achieved, the next best objective is to have the image free from all but [aperture](#) errors (spherical [aberration](#)). In this case the light distribution in the image plane is still circular, resembling the point image; there is a true coordination of object point and image, although the image may be slightly unsharp. If the aperture errors are small, or if the image is viewed from a distance, such an image

formation may be very satisfactory. *See also* Aberration (optics).

Asymmetry and deformation errors may be very disturbing if not held in check, because the light distribution of the image of a point in this case has a decidedly undesirable shape.

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Medical Dictionary: optical image

*n.*

An image formed by the refraction or reflection of light.

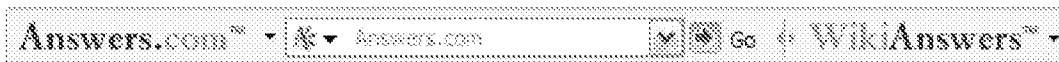
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